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EFFECT OF RAISING STORAGE TEMPERATURE OF LATE GROWN IRISH COBBLER POTATOES¹

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For the past thirty years Irish Cobbler potatoes have been grown as a late seed crop on the Eastern Shore of Maryland for planting the early crop the following spring. In addition to using the late home grown seed for planting the early crop, northern grown seed is also extensively used. The proportion of northern and home grown seed which is used depends upon the price of the northern grown seed and the amount of home grown seed available for planting. The northern grown seed is either shipped in from the north in the fall or in the spring. The late home grown seed is usually grown from northern seed which has been kept in cold storage from April first until a few days before it is planted, although it is sometimes grown from home grown seed kept in cold storage during the summer the same as northern grown seed. The seed crop of Irish Cobbler potatoes on the Eastern Shore of Maryland is planted about August first and harvested early in November. After it is harvested, this seed is kept in storage houses or cellars at a temperature of approximately 40° F. until it is planted in the spring or removed to cold storage when it is to be kept for planting the late crop.

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Experiments to determine the relative yields of home grown and northern grown Irish Cobbler seed potatoes have been conducted by the writer in Worcester County in cooperation with E. I. Oswald, former County Agent, and later with the joint author and with R. T. Grant, the present County Agent. The results of these experiments have demonstrated that northern grown seed comes up earlier, matures earlier, and yields slightly more than home grown seed, but that the shape and size of late grown potatoes make them more desirable for seed than potatoes grown in the north. Jehle and Oswald (1) found that in a five year average, northern grown Irish Cobbler potato seed yielded 265.2 bushels and home grown seed yielded 209.3 bushels per acre. Approximately the same results have been obtained in experiments conducted since 1929. Similar results with northern and home grown seed have been reported by W. O. Strong, County Agent of Accomac County, Virginia, at the annual potato tours of the Virginia Eastern Shore Experiment Station.

In 1933 the writer conducted two experiments in western Maryland and one on the Eastern Shore, with Eastern Shore home grown seed, northern grown Irish Cobbler seed, and western Maryland home grown seed. Both of the western Maryland experiments were conducted in the mountains, one at an elevation of approximately 1,000 feet and the other at an elevation of approximately 2,700 feet. The Eastern Shore plot was planted on March 23, the Frederick County plot on May 2, and the Garrett County plot on May 23. Yield records which were obtained from these plots are indicated in the following table.

Yields from Irish Cobbler potatoes from various sources in 1933

Seed Source	Eastern Shore Bushels per acre			Frederick County Bushels per acre			Garrett County Bushels per acre		
	U. S. No.	Culls	Total	U. S. No.	Culls	Total	U. S. No.	Culls	Total
	1 & 2			1 & 2			1 & 2		
Maine	190	50	240	227	11	238	122	14	136
North Dakota ..	183	54	237	...	..	...	...	..	...
Michigan	181	45	226	...	..	...	137	16	153
Garrett Co., Md...	150	77	227	222	15	237	151	13	164
Eastern Shore from Maine seed.	130	36	166	226	11	237	146	15	161

It will be noted that in the western Maryland plots the Eastern Shore Irish Cobbler seed yielded practically the same as the northern

and mountain grown seed. In the Eastern Shore plots the Eastern Shore seed came up later and matured later than the northern and mountain grown seed, but in the western Maryland plots it came up and matured at approximately the same time as northern and mountain grown seed. Thus, since the Eastern Shore seed yielded just as well as the northern and mountain grown seed when it was planted late enough to come up at the same time, it was concluded that if the Eastern Shore seed could be made to come up and mature as early as the northern grown seed on the Eastern Shore it should yield just as well. White (2) of the Maryland Experiment Station found that if seed grown on the Eastern Shore of Virginia were kept in a heated basement one month before planting, it came up and matured almost as early as Maine grown seed. He did not obtain any comparative yield records. He states that "It would seem from this work that any late planted, fall harvested seed should be placed under warm conditions a month or so before it is planted if it is expected to produce an early crop."

In 1934 the writers conducted an experiment to determine the effect of raising the temperature of late grown Eastern Shore Irish Cobbler potato seed late in the storage period. Three $\frac{1}{8}$ acre plots were planted from seed grown on the Eastern Shore late in 1933 from Maine grown seed. One plot was planted with seed kept at approximately 40° F. from the time it was dug until January 15 and then kept at a temperature of approximately 65° F. until it was planted. Another plot was planted with seed kept at approximately 40° F. from the time it was dug until February 14 and then kept at a temperature of approximately 65° F. until it was planted; and another plot was planted from seed kept at approximately 40° F. during the entire storage period. One-eighth acre plots were also planted from North Dakota, Maine, and Prince Edward Island seed. The plot planted from the home grown seed kept at 65° F. from January 15 until planting time came up and matured at the same time as the plots grown from North Dakota, Maine and Prince Edward Island seed; the home grown seed kept at 65° F. from February 14 came up and matured five days later; and the home grown seed kept at 40° F. during the entire storage period came up and matured ten days later than the northern grown seed. The plot was planted on April 11, and dug on July 18. The following yields were obtained:

Yield records from Northern and Eastern Shore grown Irish Cobbler potato seed, showing effect of raising storage temperatures late in the storage period

Seed Source	Storage Condition	Yield in Bu. per acre		
		U. S. No. 1 & 2	Culls	Total
Eastern Shore from Maine seed	Kept at 40°F. until Jan. 15, then at 65°F. until planted.	245	38	283
North Dakota	Ordinary storage.	227	39	266
Eastern Shore from Maine seed	Kept at 40°F. until Feb. 14, then at 65°F. until planted.	219	45	264
Eastern Shore from Maine seed	Ordinary storage.	215	28	243
Prince Edward Island	Ordinary storage.	210	44	254
Maine	Ordinary storage.	175	44	219

The writers plan to continue these studies over a period of several years but they feel that the results obtained this year are so promising that they may be of interest to potato growers and investigators.

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POTATOES AS A HEALTH FOOD

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In the November, 1932, issue of the Guide Post, published by the Pennsylvania Potato Growers' Association, J. B. R. Dickey wrote an interesting article entitled "Potato Consumption, Past and Present." In it, he shows how the per capita consumption of this queen of vegetables has been steadily declining for 20 years. By five-year periods beginning in 1912, our per capita consumption has been 3.9, 3.7, 3.5 and 3.2 bushels annually. During this period the total potato production in the United States has remained almost constant, while our population has increased about a million and a half people each year. Yet, apparently, every one has had about all the potatoes he wanted to eat. Professor Dickey further shows that the depression

had little or nothing to do with this decline in consumption. Our people ate as many potatoes during the high-price years of 1924 to 1928 as they ate during the lean years before and since.

Many factors can be cited to account for this very definite trend. Fresh vegetables at relatively low cost and in great variety are now available the year 'round. No one can dispute the benefit they have provided the daily diet. Breakfast foods of many kinds and styles along with citrus fruits, having the benefit of extensive magazine advertising, have helped to crowd potatoes off the breakfast table. Farmers with their cellars full of quality potatoes are fast losing their one-time custom of eating potatoes for breakfast. Canned vegetables of a dozen sorts are now not only available but cheap and within reach of the thinnest pocket-book. And the human stomach will stretch only so far. Even a potato with poor eyes would be forced to see that this wide variety of competitors has probably come into the picture to stay. But worst of all is the misconception of many of our women folk that potatoes eaten regularly, ultimately mean superfluous flesh. Let me try to indicate by quotations from the written word of some leading authorities some good arguments why we should eat more potatoes purely from the health standpoint.

Doctor John Harvey Kellogg, for many years director of the Battle Creek Sanitarium at Battle Creek, Michigan, is one of our most emphatic exponents of the potato as a health food. During the years 1928 and 1929 he published a series of four articles in the American Potato Journal on this subject. Here are some of the things he wrote. Per capita consumption of potatoes among the laboring classes in Germany averages 24 bushels annually. In America it is less than 3. "American people, through the medium of magazine and newspaper advertising, have been educated in the use of cereals to such an extent that ready-to-eat foods prepared from wheat or corn have become conventional staples of the American breakfast and fill a large share of the space on grocers' shelves. These breakfast foods have performed a most useful service by lessening the consumption of butchers' meat and have no doubt been a factor in the lowering of the American death rate which has occurred within the last few years." Then Doctor Kellogg points out that too much cereal food results in lowering of the alkalinity of the blood. It is this acid accumulation resulting from physical exertion that causes fatigue. Acidosis is often forerunner to many of our more common organic diseases. To counteract acidosis we need a proper balance of alkaline-forming foods. "The ash of the potato is more highly alkaline

than that of any other of our common foodstuffs, its ash containing about 10 times as much potash as does that of fine flour bread. Potato-eating Ireland furnishes more examples of long-lived people than any other European country except Hungary. The starch of the potato will completely digest in 10 minutes, while that of rice, wheat, or corn requires 2 hours and of oatmeal 80 minutes. The scourge of scurvy in England almost completely disappeared after the potato was introduced into that country."

Professor Jessie Richardson, of the Montana Experiment Station, recently discussed the place of potatoes in the diet by saying that potatoes are rich in such essential minerals as iron, sulfur, phosphorus, sodium, and potash, being deficient only in calcium. Potash and sodium are especially valuable in counteracting acids or acidosis. The potato has a good supply of Vitamin B and C but is deficient in Vitamin A. She recommends eating plenty of milk and leafy vegetables with potatoes to insure a completely nutritive and healthful diet. Apparently, meat is not essential to our well-being. To quote again from Doctor Kellogg: "Potato growers of America might well adopt as an antidote for the meat packers' slogan 'Eat more meat to save the livestock industry,' the soundly based, safe and sane slogan, 'Sixty potatoes to a pound of meat.' It would be safe to predict that the substitution of potatoes for half of the breakfast foods now eaten and nine-tenths, or even all, of the meat consumed would result in the addition of ten years of life to the average citizen and a doubling of his efficiency."

STORE AND COOK PROPERLY

It seems that the food value we get from potatoes depends to some extent on the way they are stored and the way they are cooked. Marian Dye Sweetman, of the University of Maine, says that potatoes stored at temperatures below 40° F. result in their having not only a sweetish taste, but also an objectionable dark color when cooked. We hear many complaints about this dark color in cooked potatoes. The fault may be due to improper storage, or it may be due to a lack of sufficient potash in the soil where they grew. If it is due to storage at too low temperature, then the fault can be corrected by storing temporarily at a temperature range of 68° to 70° F.

Leila Wall Hunt, of the Washington Experiment Station, writes that the best ways to cook potatoes to preserve their food value and insure good flavor and appearance are by baking or by steaming. Her experiments show that an average of 7 per cent of the food value is

lost when potatoes are boiled after peeling, while steaming them in their jackets results in a loss of not over 1 per cent. Here are some ways that potatoes lose their nutritive value between the cellar and the dinner table: paring, which cuts away the most valuable food part; soaking in cold water after peeling; putting to cook in cold rather than hot water; cooking in unsalted water; and finally, exposing a large amount of cut surface to water such as in dicing. Another bit of good advice on cooking potatoes is offered by the Montana Station. They recommend quick cooking because slow cooking tends to destroy Vitamin C.

In conclusion, I want to give you the statement of Paul F. Kempter, Chief Steward of the Pantlind Hotel at Grand Rapids, Michigan, regarding his opinion why we should eat more potatoes. He says the Swiss, Germans, Polish and Irish have the best complexions of any peoples in the world. They owe it to their heavy consumption of potatoes. "If potatoes could have the benefit of as good advertising as breakfast foods, sauerkraut, oranges, and pickles, our girls would not be spending their pin money for cosmetics." He says, "The potato needs no defense, it is the greatest blessing that came from America to the world, the noble spud, preserver of nations, prolonger of life, friend of rich and poor, the maker of happier faces and happier homes."

EFFECT OF INOCULATED SULPHUR, LIME AND MERCURY COMPOUNDS ON THE YIELD OF POTATOES

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INTRODUCTION

Most of the soils in which potatoes are grown in the Hastings, Florida, area have a pH reaction of from 4.75 to 5.00. Soils having a pH as low as 4.50 and as high as 6.00 are comparatively rare. The question is frequently asked as to whether the application of inoculated sulphur to the soil to make it more acid or lime to make it sweeter will affect the yield of the potato crop at Hastings.

Bushnell (1) found that lime had little effect on the yields of potatoes in Ohio where the initial pH of the soil ranged from 4.8 to

¹Acknowledgments are due Dr. L. O. Gratz, Plant Pathologist in Charge, North Florida Station, Quincy, Fla., who had charge of the work in 1930, and Dr. C. M. Tucker, Plant Pathologist, University of Missouri, Columbia, Mo., who conducted the investigations in 1931.

5.3. At Ithaca, N. Y., Smith (2) reported that the total yields of potatoes were reduced when grown in soil which had been treated with inoculated sulphur and had a reaction of pH 4.68-4.90, and no reductions occurred in soil treated with hydrated lime and testing pH 6.08-6.51 and pH 7.16-7.45. On the acid soils of Long Island, Wes-sels (3) found that the yields of potatoes were decreased and that the soils where potatoes were to be grown should be maintained at a reaction between pH 4.8 and 5.4.

In connection with studies on the control of certain diseases of potatoes, information has been obtained on the effects of the application to the soil of various amounts of sulphur and lime and five mercury compounds on the yields of potatoes in five localities in the Hastings, Florida, area. This information appears sufficiently important to pass on to growers whose soils are of similar nature.

MATERIALS AND METHODS

Inoculated sulphur and hydrated lime were applied to the soil in various amounts in experimental plots located at Lacrosse, Doctors Inlet, Hastings, Spuds, and West Tocoï, Florida. Sulphur was used at the rates of 200 pounds, 400 pounds, 600 pounds, 800 pounds, and 1200 pounds per acre, and lime at the rates of 1000 pounds, 2000 pounds, 3000 pounds and 4000 pounds per acre. Both materials were broadcasted on the land and incorporated with the soil with a disk harrow. The sulphur and lime treatments were made at Lacrosse in December, 1929, and at Doctors Inlet and Hastings in October, 1930. Sulphur was added to the soil at Spuds and West Tocoï in November, 1932.

At Lacrosse, Doctors Inlet, and Hastings, yields were based on 3-row plots 50 hills in length. The rows were $3\frac{1}{2}$ feet apart and the hills 1 foot apart in the rows. The treated and untreated plots were distributed at random in the fields. There were four border rows between each plot. At Lacrosse the treated plots were replicated five times and the check plots nine times. At Doctors Inlet there were four replications of each treatment and check, and at Hastings eight replications were used.

The yields at Spuds and West Tocoï were based on single row plots 50 hills in length. The treated plots were systematically arranged with two border rows between each treated plot and its adjacent check plot. The plots receiving different treatments were replicated eight times at Spuds and ten times at West Tocoï. There were 32 check plots in the field at Spuds and 48 at West Tocoï.

The average pH reactions of the soils in the various plots were determined for each year with a Youden Hydrogen-Ion Concentration apparatus and were based on tests of samples taken from the plots at two and in some cases three times during the potato-growing season.

EFFECT OF SULPHUR

Inoculated sulphur generally reduced the yields of potatoes, the greatest reductions resulting from the heaviest applications (table 1). Many plants in the plots receiving 400 and 800 pounds of sulphur per acre at Doctors Inlet were stunted in growth, turned yellow and died prematurely. This effect was also noticeable, but to a less degree, at LaCrosse in plots receiving 1200 pounds per acre and at Hastings, Spuds, and West Tocol in those which received 800 pounds per acre. At Doctors Inlet on a plot receiving 800 pounds of sulphur per acre there was very little growth of potatoes, weeds or grass, as compared to the normal growth of these plants on adjacent non-treated plots.

Sulphur at the rate of 200 pounds per acre reduced the yields only slightly at Spuds and West Tocol; it was not used at this rate in other localities. At LaCrosse and Hastings 400 pounds sulphur per acre caused no significant increases or reductions in yield, but at Spuds and West Tocol its effect in reducing the yield was noticeable. At Doctors Inlet the reductions were very marked, the yields being reduced by 25.6 barrels in 1931 and 20.9 barrels in 1932. Sulphur applied at the rate of 800 pounds per acre resulted in reduced yields in each of the five experimental fields, the greatest reduction being 33.3 barrels of marketable potatoes per acre in 1932 at Doctors Inlet. When applied at the rate of 1200 pounds per acre at LaCrosse the yield was reduced 17.2 barrels per acre in 1930, 38.1 barrels in 1931 and 20.7 barrels in 1933.

The application of sulphur at all rates resulted in increases in the acidity of the soil in the five localities, the greatest increases being caused by the heaviest applications. Greater changes were brought about by the addition of the same amount of sulphur to the soil in some localities than in others. The greatest change in acidity resulting from the use of 800 pounds sulphur was noted at Doctors Inlet, where in 1932 the pH in plots receiving this treatment became 3.46 as compared to the average of pH 4.73 in check plots in the same field. The addition of 1200 pounds of sulphur per acre did not lower the pH as much at LaCrosse as did 800 pounds at Doctors Inlet.

The LaCrosse and Hastings soils possessed higher initial pH reactions than the Doctors Inlet, Spuds, and West Tocol soils. Consequently, these soils did not attain the same degree of acidity and the

TABLE 1—Effect of various amounts of inoculated sulphur on the hydrogen-ion concentration of the soil and on the yield of marketable potatoes when applied to the soil at LaCrosse, Doctors Inlet, Hastings, Spuds and West Toco, Florida.

Soil reaction and yield in barrels of marketable potatoes per acre in plots treated with inoculated sulphur at the rates per acre indicated^a

Place	None (check)			200 lbs.			400 lbs.			600 lbs.			800 lbs.			1200 lbs.		
	Year	pH	Total Yield	pH	Total Yield	Increase over Check	pH	Total Yield	Increase over Check	pH	Total Yield	Increase over Check	pH	Total Yield	Increase over Check	pH	Total Yield	Increase over Check
LaCrosse	1930	5.90	75.9	....	....	....	5.73	76.9	+ 1.0	....	....	....	5.17	72.9	- 3.0	4.96	58.7	-17.2
	1931	5.34	98.3	....	....	....	4.92	100.0	+ 1.7	....	....	....	4.72	80.7	-17.6	4.45	60.2	-38.1
	1933	4.72	82.6	....	....	....	4.81	78.9	- 3.7	....	....	....	4.69	71.0	-11.6	4.52	61.9	-20.7
Doctors Inlet	1931	4.65	84.1	....	....	....	4.26	58.5	-25.6	....	....	....	4.13	52.0	-32.1	....	....	....
	1932	4.73	35.6	....	....	....	4.38	14.7	-20.9	....	....	....	3.46	2.3	-33.3	....	....	....
Hastings	1931	4.99	77.8	....	....	....	4.92	78.8	+ 1.0	....	....	....	4.82	64.1	-13.7	....	....	....
	1932	4.77	35.8	....	....	....	4.62	36.2	+ 0.4	....	....	....	4.45	31.4	- 4.4	....	....	....
Spuds	1933	4.85	74.9	4.61	70.7	-4.2	4.42	66.0	- 8.9	4.39	64.4	-10.5	4.19	52.6	-22.3	....	....	....
	1933	4.62	51.5	4.32	50.1	-1.4	4.16	46.6	- 4.9	4.01	34.9	-16.6	4.00	33.4	-18.1	....	....	....
West Toco																		

^aThe potatoes were machine graded and the marketable tubers were of U. S. No. 1 and No. 2 grades.

yields of potatoes were not reduced the same amount by application of like quantities of inoculated sulphur in the different localities.

The sulphuric acid which accumulated in the soil when the inoculated sulphur decomposed may have been toxic to the potato plants or it may have set free some other toxic material or materials which lowered the yields, or the increased acidity may have rendered essential plant food elements unavailable.

EFFECT OF LIME

The effect of applications of lime to the soil at various rates was not noticeable on the growth of the potatoes. However, at Doctors Inlet lime applied at the rate of 1000 pounds per acre increased the yield 11.3 barrels per acre in 1932, and a yield increase of 6.0 barrels per acre was obtained at LaCrosse in 1930 in plots treated with 2000 pounds per acre (table 2). In other seasons in the three locations, lime, regardless of the rates of application, had no very material effect in increasing the yields but tended to reduce them, the amount of reduction ranging from 0.4 barrels per acre in plots receiving 4000 pounds per acre at Doctors Inlet to 17.5 barrels following the use of 1000 pounds of lime at LaCrosse. There seemed to be no correlation between the amount of lime applied and the increase and decrease in yield in the plots at LaCrosse and Hastings. It was only at Doctors Inlet that the lower rate (1000 pounds per acre) caused significant increases in yields, while at this place other rates of 2000, 3000, and 4000 pounds per acre reduced the yields slightly or had little effect in increasing them.

As noted in table 2, the application of lime at the rates of 1000 pounds, 2000 pounds, 3000 pounds and 4000 pounds per acre caused the soil to become less acid and the change in the pH reaction in the direction of alkalinity was usually correlated with the rate of application of lime to the soils in the three localities. The soil at Doctors Inlet was more sensitive to the applications of lime than the soil at Hastings and LaCrosse. In this locality the addition of 3000 pounds of lime per acre changed the pH reaction 2.02 points as compared to the pH of the checks in 1931. At LaCrosse, the first season (1930) following the application of 3000 pounds of lime per acre, the pH was changed only 0.65 towards alkalinity as compared to the pH of untreated soil.

The soil of the limed plots in all localities has grown more acid each season following the first. This approach towards acidity has been more rapid in the limed plots than in the check plots, indicating that the neutralizing effect of the lime is being gradually dissipated.

TABLE 2—Effect of various amounts of lime on the hydrogen-ion concentration of the soil and the yield of marketable potatoes when applied to the soil at LaCrosse, Doctors Inlet, and Hastings, Florida.

Soil reaction and yield in barrels of marketable tubers per acre in plots treated with lime at the rates per acre indicated ^a												
Place	None (check)		1000 lbs.		2000 lbs.		3000 lbs.		4000 lbs.		Increase over Check	
	Year	pH	Total Yield	pH	Total Yield	pH	Total Yield	pH	Total Yield	pH		Total Yield
Lacrosse	1930	5.90	75.9	6.41	71.4	— 4.5	81.9	6.55	71.5	— 4.4	85.6	...
	1931	5.34	98.3	5.49	100.0	+ 1.7	81.3	5.99	95.6	— 2.7	...	...
	1933	4.72	82.6	4.85	65.1	— 17.5	55.4	5.07	77.5	— 5.1	...	...
Doctors Inlet	1931	4.65	84.1	5.77	86.6	+ 2.5	82.1	6.67	82.9	— 1.2	85.6	...
	1932	4.73	35.6	5.48	46.9	+ 11.3	37.1	5.75	28.3	— 7.3	35.2	...
Hastings	1931	4.99	77.8	5.48	73.9	— 3.9	74.6	— 3.2	...	...	...	...
	1932	4.77	35.8	5.16	34.6	— 1.2	32.0	— 3.8	...	...	...	...

^aThe potatoes were machine graded and the marketable tubers were of U. S. No. 1 and No. 2 grades.

EFFECT OF MERCURY COMPOUNDS ON THE YIELD OF POTATOES

MATERIALS AND METHODS

Calomel and yellow oxide of mercury were mixed with the fertilizer and applied to the soil in plots at LaCrosse and Elkton at the rates of 5, 10, and 20 pounds per acre; DuBay 890, DuBay 893 and Stimuseed were also used, each at the rate of 20 pounds per acre. The fertilizer was one of a 5-7-5 analysis and was applied to the plots at the rate of one ton per acre. Single row plots 60 feet in length were used and each treatment was replicated 10 times; there were 20 check plots in the Lacrosse field and 30 in the Elkton field. The same treatments were made in both fields, except that Stimuseed was used only at Lacrosse.

RESULTS

The yield was increased 8.2 barrels per acre at Lacrosse by the application of 5 pounds of yellow oxide of mercury per acre; but when applied at the same rate at Elkton, it reduced the yield 8.8 barrels per acre (table 3). Stimuseed, applied at the rate of 20 pounds per acre, increased the yield 4.8 barrels per acre at Lacrosse, the only place where it was used. The use of the different compounds at the

TABLE 3—*Effect of various quantities of mercury compounds on the yield of Spaulding Rose potatoes when they were applied with the fertilizer at Elkton and LaCrosse, Florida, in 1931.*

Treatment	Yield of Marketable Tubers in Barrels per Acre ^a			
	Total	Elkton Increase over Check	Total	Lacrosse Increase over Check
5 lbs. calomel per acre	65.8	— 8.5	77.3	+ 0.7
10 lbs. calomel per acre	65.8	— 8.5	68.8	— 7.8
20 lbs. calomel per acre	68.4	— 5.9	52.3	—24.3
5 lbs. yellow oxide of mercury per acre	65.5	— 8.8	84.8	+ 8.2
10 lbs. yellow oxide of mercury per acre	62.7	—11.6	74.4	— 2.2
20 lbs. yellow oxide of mercury per acre	53.8	—20.5	33.7	—42.9
20 lbs. Stimuseed per acre .....	....	....	81.4	+ 4.8
20 lbs. DuBay 890 per acre	63.4	—10.9	75.8	— 0.8
20 lbs. DuBay 893 per acre	66.5	— 7.8	78.6	+ 2.0
None	74.3		76.6	

^aThe potatoes were machine graded and the marketable tubers were of U. S. No. 1 and No. 2 grades.

various rates generally caused significant reductions in yields; the maximum reduction occurred at Lacrosse where 20 pounds of yellow oxide of mercury per acre decreased the yield 42.9 barrels. The results indicate that none of these chemicals at the rates used in these experiments is of sufficient value to justify recommendation with the possible exception of Stimuseed as most of them caused yield reductions.

SUMMARY

1. Inoculated sulphur applied to the soil at the rates of 200, 400, 600, 800 and 1200 pounds per acre caused the soil to become more acid, and the increase in acidity was correlated with reductions in yields. The greatest increases in acidity and yield reductions resulted from the heaviest applications of sulphur.

2. The application of 200 pounds of sulphur per acre reduced yields only slightly at Spuds and West Toco; 400 pounds did not materially affect the yield at LaCrosse, reduced yields some at Spuds and West Toco, and reduced the yields approximately a third to a half at Doctors Inlet. When applied at the rate of 800 pounds to 1200 pounds per acre yields were reduced significantly in all localities. The use of 800 pounds caused a maximum reduction in yield of 33.3 barrels of potatoes per acre at Doctors Inlet.

3. Lime applied to the soil at the rate of 1000, 2000, 3000 and 4000 pounds per acre caused the soils in three localities to become less acid. At Doctors Inlet yields were increased slightly by the addition of 1000 pounds lime per acre. At the same and at other rates in all localities yields were either not affected materially or were reduced.

4. Calomel and yellow oxide of mercury applied to the soil with the fertilizer at the rates of 5, 10, and 20 pounds per acre, respectively, usually caused marked reductions in yields, the greatest reductions resulting from the heaviest applications. Stimuseed which was used only at LaCrosse at 20 pounds per acre increased the yield slightly. DuBay 890 and DuBay 893 applied at the rate of 20 pounds per acre had no marked effect on the yields at Lacrosse but lowered them significantly at Elkton.

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REVIEW OF LITERATURE

The potato seed tuber green-sprouting under the short day conditions, U. PUSCHAREW, (*Trans. Pot. Scient. Res. Inst. U. S. R. R.*,) (1933.)

This study was undertaken by the Breeding Section of the Potato Scientific Research Institute. The following varieties were tested:—Early—Epicure and Centenary; medium—Maercker and Parnassia; late—Wohltmann, Silesia and Model. The tubers were sprouted in the green house in special boxes with a day temperature of 20 to 25 C (68 to 77°F) and a night temperature of 13 to 15°C (55.4 to 59°F). The treatments given previous to planting were:

- A. Tubers unsprouted stored in common cellar.
- B. Tubers green-sprouted under full daylight.
- C. Tubers green-sprouted under 10 hours of daylight.
- D. Tubers green-sprouted under 6 hours of daylight.

The green-sprouting was begun April 4 and planting took place May 5. Each lot had a threefold repetition. No difference was observed in date of plant emergence or flowering. In studying tuber formation lots of 45 hills of each treatment were harvested and weighed at ten-day intervals beginning July 5. It was found that the shortening of the day during the green-sprouting of the seed, caused, in all cases, an earlier ripening of the plants and hastened tuberization. The degree of maturity acceleration was greatest from the short day treatments.

In the short day series the final yields of Centenary, Silesia and Maercker were lower than the check yields; those of the Parnessia and Wohltmann were similar to the check, while Epicure and Model gave decidedly larger yields than the check lots.—WM. STUART.

Isolated tuber-unit seed plots for the control of potato virus diseases and blackleg in northern Maine, E. S. SCHULTZ, *Reiner Bonde*, and W. P. Raleigh. (*Maine Agr. Exp. Sta. Bul.* 370, (1934) p. 32, figs. 1-10).

The results of a study of comparative methods of controlling virous diseases and blackleg in potato seed stocks over a period of years in northern Maine are reported. Control was most effective by isolation and thorough roguing of seed plots planted by the tuber-unit method. Planting not more than one seed stock in each plot is recommended. Mild mosaic was more difficult to control than leaf roll, spindle tuber, giant hills and blackleg. A seed plot

of one to two acres of Green Mountain variety was considered typical but not ideal for Aroostook County conditions. "Six years of experimental roguing here prevented an increase of viroous diseases beyond seven per cent, in contrast with an increase of 91 per cent in two years in a nearby unrogued field." At least four roguing were found to be desirable. Insect records, distance of isolation from other potatoes, and other data had no value in predicting success during the season in the control of mild mosaic. Insects of different kinds are unlike in their ability to transmit any one disease. Tuber-unit planting proved of much value in facilitating the thoroughness and ease of removing diseased plants as centers of infection. Blackleg was more easily controlled by planting only fresh-cut seed than by roguing, seed selection and seed treatment altogether.—E. V. HARDENBURG.

Cytological investigation of the South American cultivated and wild potatoes, and its significance for plant breeding, V. RUBIN, *Bul. of App. Bot. of Genetics and Plant Breeding* (1933). 11a series No. 2, pp. 3-100 (Russian). English explanation of plates pp. 63-68. English summary pp. 97-98.

Chromosome numbers in the root tips and during reduction division, were investigated with a large number of species and varieties of South American potatoes. The author reports that wild tuberiferous species of *Solanum* form distinctly polyploid series of $2n$, $3n$, $4n$, $5n$ and $6n$ where $n = 12$. Species with an odd n show irregular reduction division, as well as a high percentage of abortive pollen, suggesting that they are hybrids. South American cultivated varieties had chromosome series of $2n$, $3n$, $4n$, and $5n$, where $n = 12$. Those with $3n$ and $5n$ being irregular in reduction division and having very little good pollen. These cytological investigations indicate that wide spread hybridization occurs in nature among tuberiferous species of *Solanum*. They found perfect chromosome pairing in hybrids between cultivated South American species or between the latter and wild species, thus proving that the haploid sets of these species are made up of groups of 12 chromosomes. The species most frequently used heretofore, in crossing with European varieties: viz., *S. Maglia* (Schlechtld), *S. Commersonii* (Dun), and *S. tuberosum* (Sutton), showed triploid and pentaploid chromosome numbers thus differing from *S. tuberosum*, and this is considered the cause of the poor seed and pollen production experienced.—H. O. WERNER.

SECTIONAL NOTES

IOWA

We have had several good seasons for the peat land growers of potatoes. These men are located among the corn and hog farmers and in this way have heard much about acreage control. These are almost the only men who produce potatoes in large quantities. This year the peat farmers had a wonderful sale of the bulk of their crop at good prices. Now that the market has crashed, however, they are discussing the possibility of acreage control. They and the writer believe in other methods for permanent control but will welcome any feasible method of control as a temporary policy. They are convinced however that, in the long run, individual initiative is the only policy that will work. (November 6).—C. L. FITCH.

MAINE

This office has summarized the digging inspection records of certified seed for this season and finds the yields are as follows:

Green Mountains	4760 acres
	Average 388 bushels per acre
Irish Cobblers	6345 acres
	361 bushels per acre
Spaulding Rose	693 acres
	390 bushels per acre
Other Varieties	441 acres
	375 bushels per acre

Several shipments to Florida have started, and for the next few weeks this will be the bulk of our certified business. The market has held in spite of the last unfavorable crop report. Price was so low it probably could not go any lower and do business. Potatoes are housed for the winter, and our growers are not anxious to sell on this market.

Potato week, conducted by the State Development Commission and the Department of Agriculture from November 12 to 17, has been very successful. More people than ever have laid in their

winter supply of spuds. Next week is the State Seed Show which will be held in Bangor. (November 17).—E. L. NEWDICK.

The potato situation in Maine for the growers and dealers alike is anything but rosy. Upon the basis of the November 1 forecast, Maine has an increase of fifteen million bushels over last year and Maine, New York and Pennsylvania have approximately 32% of the total United State production. This is a serious situation for all the growers of these states and one which cannot be readily corrected.

The street price on the week of November 15th was 50c per barrel in Maine. Its continuance at that figure will depend largely upon the stabilizing effects of Government purchases. Just how long the Government will continue buying relief potatoes is uncertain, but the plan now calls for discontinuing it after December 1. To date they have purchased approximately 900 cars with a total of 1,800 cars as the allotment. Growers and dealers are very willing to move their holdings freely but to date it has consisted chiefly of cold storage lots.

Every one seems discouraged and no plan for bettering the situation is being considered. Thus far little interest has been evidenced in the A.A.A. program in making potatoes a basic commodity. This apathy on the part of the growers is due to a lack of knowledge and general discouragement more than anything else.

Seed has been moving quite well to date. Summer sales were brisk and some of the tonnage moved has been shipped on those early orders. Sales this fall on certified seed have been slow and by piece meal. This week there was practically no activity. Undoubtedly this is due in a large measure to the general pessimism over the future prospects.

There is some discussion taking place relative to various plans for relief. The progress of the steering committee nominated by the northeastern Conference in New York City week of November 10th will be watched with interest in Maine. With the forecast for the early states next year showing only a 2% cut, there is no reason to believe the situation will be better in 1935 than it is at present. Some way must be found to prevent the potato growers of the northeastern territory from annihilating themselves.

Every one who has a stake in the potato production in these northeastern states should lend all possible aid to the most practical plan for curtailment of acreage whenever that can be found. (November 16).—FRANK W. HUSSEY.

MASSACHUSETTS

The table stock crop of potatoes in Massachusetts for 1934 is now estimated at 2,640,000 bushels as against 2,325,000 for 1933 and 1,420,000 for the five-year average 1927-1931. Movement of local stock is progressing normally through both retail and wholesale channels. Up to the present, there has been a disposition on the part of larger growers to store the bulk of the crop for orderly marketing to avoid depressions of local prices with present demand reasonably active at farm prices wholesale ranging \$.85 to \$1.00 per cwt. (Nov. 15).—RALPH W. DONALDSON.

NEW YORK

The harvest is completed in New York State, and first figures indicate a total crop of some thirty-one or thirty-two million bushels. For the most part, the tubers are of good quality and size. Some fields produced a few large ones, but on the other hand there are very few small potatoes. There is some loss from late blight rot, but only in scattered small areas. Everything is quite all right except the sale price.

Already the consumer is complaining of poor table quality; he is not able to locate fine quality stock. Such a situation emphasizes the need for more careful selection of soil type, better cultural practices, more intelligent choice of variety, and more exacting grade standards. The grower must be shown that the more culls he leaves at home, the better his chance to receive a fair price for those potatoes he ships.

It has been suggested by several growers in New York that the only point of contact they wish to establish with a governmental agency is that of grading; better grades and, what is more important, an enforcement of these grade requirements to cover all truck shipments as well as rail. It is possible that if the grade requirements are made sufficiently elastic, grading might become an important factor in the removal of surplus from markets. For example, in a year like this one, the standards should be more strict so that a smaller volume reaches the market. On the other hand, if the crop proves to be short next year, then liberalize the standards a bit so that a larger proportion reaches the market. Such a system obviates the danger of controlled acreage which in a drought year of severe blight epidemic might result in an acute shortage.

Immediately the problem arises, at what time during the year shall the central agency with power to act decide that a shortage or surplus or normal crop exists. Shall it be when Florida enters

the market, when the Carolinas come in, the Eastern Shore, New Jersey, Long Island, or the late surplus states? At once, the whole procedure becomes most involved and any change decided upon might be quite difficult to bring about and enforce. Considerable feeling between producing areas, cries of favoritism, and so on would readily develop if the marketing from one area had been materially limited and the marketing from another area had been liberalized due to a sudden reduction in the prospective crop.

As has been pointed out many times before, a marketing agreement among producers of raising grapes in a limited area of California is quite a different thing from a marketing agreement for the potato crop in the United States. The question is not easily solved and, as is usually the case, it is easier to find fault with the schemes already suggested for improving the situation than it is to put forward a workable proposal. A thorough discussion of this and other matters of extreme interest to potato growers should result in some profitable sessions at the annual meeting of the Potato Association of America at Pittsburgh the last week in December. (November 17).—J. R. LIVERMORE.

It is planned to use two forms of tags on New York Certified seed potatoes this year. One of these bears the word "certified" in blue and the other in red letters. The tags with "certified" printed in blue are intended for use on stock graded U. S. No. 1 or better. It is expected that most of the stock will be shipped under this tag.

The tags with the word "certified" marked in red are for use on grades lower than U. S. No. 1. These lower grades and the tags are to be used only in cases where there is an agreement in writing between the contracting parties as to the grade to be used. In such cases the grade is to be stated upon the bag. This tag will probably be used for the most part in connection with local sales.

Seed sold under either tag comes from inspected certified fields and has had to meet the same requirements except with regard to grade.—E. B. LYMAN.

NORTH CAROLINA

The total crop for the season, including the early crop, is estimated as 10,324,000 bushels; of this 2,088,000 bushels are estimated as late crop, most of which are grown in the mountain counties

which have similar growing conditions to the northern states. So far, very little of this late crop has been sold, as the growers are waiting for an advance in price. It is estimated by the State Statistician that there was a 7% greater acreage in late potatoes this year than during the 1933 season. The crop has been uniformly good.

Two hundred and seventy-four acres of potatoes passed the State Certification inspection. It is estimated that there will be about 30,000 bushels of certified seed, grown in the higher altitudes of the mountain sections of the state. About three-fourths of this amount is of the Irish Cobbler variety and one-fourth Green Mountain. This is an increase in production of certified seed of approximately 300% over last year. A large part of this increase in the production of certified seed has been due to efforts of the Horticultural Department of North Carolina State College, and the North Carolina Crop Improvement Association, and part of it has been due to the interest of the Tennessee Valley Authority in the production of better crops in their territory. Most of this seed crop is sold in the mountain sections of the State and in Tennessee, while a small part of it finds its way down to the early potato section of the eastern part of the State and South Carolina. (November 17).—ROBERT SCHMIDT.

NORTH DAKOTA

The unsold portion of the 1934 potato crop is now in secure winter storage. A considerable percentage of the crop moved via truck to western drought areas. With the exception of Certified Triumphs which have moved to the lower Rio Grande Valley and Southern Florida, very few cars of certified seed potatoes have been shipped from North Dakota as yet and with prospect of continued demand from the drought area for both table stock and seed, growers and dealers are inclined to hold their seed and eating potatoes until spring.

Weather conditions have been more than usually favorable for putting land in shape for planting in 1935. (November 16).—E. J. TAINTOR.

OHIO

The potato crop in Ohio is up to the average of the state for the past five years. We have one of the best potato crops in northeastern Ohio that we have had in many years. This section of the state had

good rains and favorable weather the latter part of the growing season. The western part of the state continued dry throughout the growing season and the yields are below average.

The potatoes on the market at the present time are generally of low grade. The growers with good quality that will grade, are storing their potatoes temporarily, hoping there will be a slight increase in price when the poor grades that are on the market have gone into consumption.

Twenty-two individual Ohio growers and the Columbiana-Mahoning County Farm Bureau Coöp. exhibited at the recent Buyers' and Growers' Apple and Potato Show held at the Northern Ohio Food Terminal, Cleveland. Exhibits were commercial packages and the minimum exhibit was four-100 pound bags. These exhibits represented over 100,000 bushels of potatoes. The outstanding feature of the show was that it showed buyers (over 100 in number) that Ohio potatoes and apples, when properly grown, graded and packed, equal or surpass in quality any shipped into our markets. The trade seemed well pleased with this show and has requested another one next year. It was sponsored by the Ohio Agricultural Extension Service and the Northern Ohio Food Terminal. (November 17).—E. B. TUSSING.

PENNSYLVANIA

It seems that nearly all growers have all available storage filled. There has been very little incentive to sell at the prices offered. Truckers have been offering around 30 cents a bushel. Some have sold for a lower price and some a little higher. Farmers who have a special trade have been getting around 50 cents but report that it has been very hard to sell any potatoes so far this fall.

It seems to me very unfortunate that we cannot move the crop more rapidly, at better prices, in view of the apparent need for cheap food on the part of many people. If the government wished to help out the situation and at the same time secure a large supply of cheap food to be used in relief work, it is too bad that they could not have taken a lot of these potatoes off the market which the farmers have no room to store. (November 17).—J. B. R. DICKEY.

Our bin inspection of certified seed potatoes has just been completed. The records have not been summarized as yet but we expect an approximate production of 200,000 bushels of seed. This is the largest crop of certified seed this state ever produced. Many of our growers reported yields of over 500 bushels per acre.

Those fields that were not dug before the freeze of October 12 and 13 showed some damage from frost. Most of the seed, however, was dug before that time. Temperatures in some of the mountain counties were reported as low as fourteen degrees above zero. Fortunately this drop in the temperature was very rapid and the rise back to normal was even more sudden.

Our crop as a whole is very clean and uniform and is grading up with very little waste. There is some over-sized stock but most of this was graded out by the growers before the seed was put into storage.

Growers reported very little demand for seed this fall although several fair-sized orders were filled. The price ranged from forty-five to seventy-five cents per bushel at the farm. (November 15).—K. W. LAUER.

VIRGINIA

The Virginia Potato farmer is now chiefly concerned with one big doubt, one big question, "Can potatoes be produced profitably in 1935"?

The disastrous results of the 1934 season are well established. They can not be wiped out. They must be endured—but there must be no further repetition if it can be avoided. The way is becoming plainer. Many post-mortems have nearly been completed. The dense fog of doubt, of suspicion and uncertainty has now blown clearer and the more basic facts leading to below cost of production prices are becoming better understood.

The bitterness caused by low prices initially raised the question of personal blame and the effort to place responsibility on some one person, group or groups. This mental attitude was followed by the development of a spirit of broader understanding which led to a more dispassionate effort to clarify the basic causes of the bad outcome of 1934. This in turn should lead to means of replacing bad practices with those which should bring a measure of profit to the potato farmer in the future. The potato farmer now appreciates that all elements in the industry are in part to blame for what has taken place and no one group is wholly to blame but all must work together to replace loss with profit.

The potato industry on the Eastern Shore of Virginia and elsewhere could scarcely hope that a depression, which has con-

tinued for four years and of such scope that it covered the entire World and of such intensity that it changed the social and economic life of entire nations, could pass the potato industry by, allowing it to prosper without adapting itself better to the new conditions which depression has imposed. This industry too is beginning to recognize that the nations and the individual industries, regardless of where they are located, which are prospering, have made radical innovations as a prerequisite to renewed progress. These innovations did not come of themselves. They are the result of the thought, initiative and the organizing ability of those who control such industries. The potato farmer of the Eastern Shore of Virginia now largely believes he must exercise individual responsibility to the extent that he can, and he likewise must have more effective help from the other elements which exert such an influence for good or evil in his industry. He wants this help, which is now outside of his control, so that his own efforts, which in an unorganized way are rather futile, may be made effective.

It is quite natural that in considering the plight of the potato industry the potato farmers have a great diversity of opinions as to the cause of the potato depression and likewise differ as to the means which should be used to return prosperity to them. This explains in part the reason that market agreements, the basic commodity idea, the revulsion against speculative growing and share planting and the entrance of the fertilizer companies into the production and marketing of potatoes, either directly or indirectly, are brought into the spot light. Possibly and probably all of these could or do have a bearing on the case. In spite of the diversity of opinion as to what should be done to bring relief to the potato industry there is one cause of low prices and one method of recovery which all agree upon—namely, *that production is too great under present conditions and that acreage must be restricted before production becomes profitable.*

All sections with possibly one or two notable exceptions, are definitely committed to this belief. The problem is now confined to the question of how to secure an equitable acreage reduction. Many methods have been advocated, including marketing agreement amendments to permit acreage allotments and making potatoes a basic commodity. With a clearer understanding of the possibilities for 1935, it is realized that amendments to the marketing agreement can not be obtained unless the Congress of the

United States amends the Agricultural Adjustment Act or approves a separate bill permitting the allotment of the acreage which might be grown or the shipments which could be made by the individual farmer. This can not be done in time to help the Southern potato growers for 1935. For the same reasons the potato could not be placed in the list of approved basic commodities in time to effect acreage control in 1935, with the further limitation that under the provisions of the Agricultural Adjustment Act no means of making benefit payments or other methods of controlling potato acreage have yet been devised. Neither have they been proposed as provisions of a bill amending that Act so that, if approved, potatoes might benefit as a basic commodity.

These things and others probably will have consideration but meanwhile, what will happen to the industry in 1935? If there is no help from outside the industry to control the over production problem it must be solved from within. There might be much done through agreement, of those who engage in corporate farming or produce through trade arrangements with the farmers or who furnish, on a credit basis, supplies and/or money used in producing or marketing potatoes, to limit such acreage extensions so that each agency, company, association, etc. making such extensions will restrict them to a predetermined percentage of the acreage produced on the same lands in 1934.

Surely all those who engage in producing potatoes or who provide the means with which potatoes are produced should be more than willing to enter into such an agreement, since it does not restrict the opportunity to enlarge their individual businesses but simply limits the aggregate acreage on farms on which they have a production interest, to a predetermined part of what was grown on the same farms in 1934.

Such an agreement would allow flexibility of acreage extensions on the individual farm to safeguard credit and still adjust acreage at the desired level for 1935.

Such a method as proposed here seems feasible and quite possible of the attainment under the present conditions. It seems to be the only safety insurance obtainable for 1935, the only means to provide the farmers a measure of profit. Any plan which does not provide this is futile, and any person, corporation or association which will not extend wholehearted support to attain that end should not be associated with the potato industry. (Nov. 15).—G. S. RALSTON.

VERMONT

Low prices and the apparent growing tendency for seed buyers to wait until late winter before ordering have made a dull seed market this fall. As a matter of fact, few Vermont growers have been anxious to sell under present prices. On the other hand several carloads have been sold and shipped to Long Island on a 55 to 60c. per bushel, f. o. b. basis and on an agreed grade, without tag. These have gone to old customers of the growers and were picked lots.

Oversize is the chief trouble this year. The color was generally good, and most tubers were sufficiently mature so that there was less injury from bruising than usual. Skin flaking is uncommon.

The building of two storehouses of about 70,000 bushels total capacity, on the rail at Greensboro Bend, has materially lessened the storage problem for the Orleans and Caledonia county area, at present the largest seed growing section in the state. These houses—one built in 1933 and the other during the past summer—are the result of community enterprise, fostered by the St. J. & L. C. railroad. They are owned by a corporation, a large part of the stock of which is held by growers.

This warehousing movement is an innovation in Vermont, since there are but two other such houses in the state. The latter are privately owned. The construction of several other community owned warehouses are now being contemplated at points including Randolph, Sheldon and Morrisville. (Nov. 14).—HAROLD L. BAILEY.

WISCONSIN

Records have been completed on the Katahdin trials located in 1934 in practically all of the principal producing sections of Wisconsin. For the most part the reports received are favorable. The favorable phases of the reports refer mainly to: 1. Satisfactory vine growth from the standpoint of vigor and freedom from disease. 2. Yields equally as good as the Rural New Yorker. 3. Quality and type superior to the Rural New Yorker in 1934.

Most of the trials with the Katahdin in 1934 were conducted in Rural New Yorker producing sections. The late season heavy rains and mild weather with practically no frost in some regions resulted in late season losses in coarse, green, overlarge, immature stock. The Katahdin apparently held up better under these unusual conditions.

Several growers continue to report a decided tendency to scab in the Katahdin. Occasional reports of spindle tuber were also received.

The Chippewa variety is also showing considerable promise in Wisconsin. Both the Katahdin and Chippewa will be under trial in Wisconsin in 1934 on an increased field acreage plan.

Unusual interest has been aroused in 1934 among Wisconsin growers in the continued study on "Virus diseases" and also on factors relating to potato scab. The unusual weather conditions prevailing during the past three seasons have apparently brought these matters to a head.

Naturally growers are giving more attention to improved strains of seed and the importance of practical seed selection work in maintaining the required seed potato standard. The Seed Potato Inspection Service and Research and Extension Agencies will give increased attention to these conditions in the plan of work adopted for 1935. (Nov. 19).
—J. G. MILWARD.

CANADA

According to the preliminary estimates issued by the Dominion Bureau of Statistics there was an increase of 7.8 per cent in the 1934 potato acreage over that of 1933. In addition the yield per acre was 2.5 per cent higher in 1934 than in 1933 so that the total production is placed at 47,241,000 cwt. which is 10.5 per cent above the 1933 level.

A proposal is now under consideration to regulate the marketing of potatoes produced in Ontario and the Eastern Provinces; by orderly marketing through uniform quotations and fair trade practices; by prohibiting consignment shipments in interprovincial trade and by the licensing of dealers; by maintaining a high standard of quality and limiting shipments in the defined areas to the higher grades only; by efforts to increase consumption by publicity, advertising and other means. Local boards may be appointed very shortly to put these suggestions into effect.

There has been a fair movement of certified seed but the prices so far obtained have been exceptionally low and do not give the growers the encouragement necessary to continue the production of high quality seed potatoes. However, it is expected a good demand at better prices may later develop and that there will not be much change in acreage submitted for field inspection in 1935.—JOHN TUCKER.

AUSTRALIA

The Australian potato market has been more buoyant during the last week or two than at any time since 1929. On October 8th the price for Tasmanian Brownells in Sydney was fixed at £18 per ton and other values are correspondingly high. A few new season's potatoes from the Clarence River, Northern N. S. W. realized £24 per ton.

The reasons for this rather sudden rise in price are that deliveries of old crop have slackened off rather suddenly, while weather conditions over the past month have been unfavorable for the growth of the new crop. Green vegetables of all kinds have been in short supply also, and the cooler weather has helped to maintain the demand for potatoes.

Prices can be expected to ease off from now to January. The planting of early Bismarcks in Tasmania is heavier than usual and I believe will constitute a record. If given favorable weather conditions we may see comparatively low prices from January on. It is difficult to know what effect the present high prices will have on the planting of late crops as some growers may be tempted to sell a portion of their seed rather than risk planting at such high prices.

Queensland and Western Australia are offering small supplies to Sydney but should the price decline in the near future, these States would probably absorb the whole of their crop locally. Victoria is still forwarding limited quantities of old potatoes to the Sydney market but the early crop is backward in that State as in others. (Oct. 11).—A. CLEM FOSTER.

HAITI

Virous diseases have been negligible this year in our test. In July, however, cut-worms damaged nearly half of the crop. The growing seasons of 79 days for the Irish Cobbler and 87 for the Rural was favored by a sufficient (28 in.), though somewhat irregular, rainfall. The mean temperature was approximately 22.6° C. Aphids were kept in check by spraying with nicotine sulphate. Tip burn was general on those plots receiving the largest amount of nitrogen. Results of fertilizer tests showed an average yield of 83 bushels per acre. Where Nitrophoska was used at the rate of 1070, 1600 and 2140 pounds an acre the yield was increased to 128, 162 and 245 bushels respectively. 11-48

Ammo-phos used at the rate of 1070 and 1600 pounds an acre yielded 100 and 151 bushels while the 16-20 mixture used in the same amounts yielded 108 and 124 bushels. Cotton seed meal used alone yielded only 116 bushels. The results of the tests conducted this year have been very satisfactory and suggest that potatoes can be produced economically in Haiti provided diseases and insects are controlled. Better results would probably follow if the crop were planted in August rather than September. Unfortunately the dormancy of home grown seed prevents planting in August because of possible seed decay. It is not advisable to purchase certified seed from the States for summer shipment to Haiti since, even though such seed were available, the high summer temperature would frequently cause heavy losses through decay and rough handling. —LOUIS DEJOIE.

THE PRICE SITUATION

The following report on potatoes was released November 15 by the Bureau of Agricultural Economics of the United States Department of Agriculture: The potato crop showed continued improvement in October and prices declined slightly, particularly in the middlewestern markets. The November 1 forecast now indicates that there will be large supplies of late potatoes placed in storage for the late winter and spring markets which will tend to hold prices down through most of the present marketing season. Except for a slight seasonal rise in Idaho where the crop is relatively short this season, it is likely that potato prices will remain at near the present low levels during the next several months unless there is a material increase in demand.

The total United States potato crop is now estimated at 383,105,000 bushels compared with 320,353,000 bushels produced last year and 365,556,000 bushels the 1927-1931 average crop. In the eastern late states there are about 132,000,000 bushels this season against 96,000,000 last year, while in the Central States there are 123,000,000 bushels this year against 92,000,000 last year. In contrast to the large crops in the Eastern and Central States the Western States have only 56,000,000 bushels this year compared with 73,000,000 bushels in 1933. The 30 late states, as a whole, have 311,000,000 bushels of potatoes this season compared with 262,000,000 in 1933 and 291,000,000 the 1927-1931 average.

Reports of growers intentions received early in October in-

dicating that the 1935 acreage of early potatoes in Florida and Lower Valley of Texas may be increased 9 per cent over that planted in 1934, while that in the second section of early states may be decreased by 2 per cent; in the second early states by 5 per cent; and in the intermediate states by 6 per cent. If these changes in planted acreages take place and average yields are obtained, it is likely that there will be fewer early potatoes next spring than were marketed in early 1934. Reductions in this early and intermediate production will probably be more than offset by large supplies of old potatoes remaining in storage after the first of the year.

Potato prices at central markets followed an uneven trend during October. They declined during the first 3 weeks in the East but recovered slightly during the first week in November. In the western cities potato prices continued the steady downward trend which began about the last week of August. At New York 1. c. 1. prices to jobbers averaged 98 cents per 100 pound sack during the first week of November compared with 92 cents a month earlier and \$1.72 a year ago. At Chicago round whites averaged 82 cents per 100 pound sack (car-lot basis) during the first week of November compared with 96 cents during the first week of October and \$1.13 the first week of November a year ago.

Shipping point prices followed much the same trend as market prices. Green Mountains at Presque Isle, Maine, averaged about 41 cents per 100 pound sack f. o. b. during the first week in November against 47 cents a month earlier. Round whites averaged 54 cents per 100 pound sack f. o. b. Rochester, against 65 cents a month ago while at Waupaca, Wisconsin, they averaged 59 cents against 69 cents during the first week of October. At Idaho Falls, Idaho, Russet Burbanks averaged 76 cents per 100 pounds sack f. o. b. cash track during the first week of November compared with 68 cents a month earlier.

The United States farm prices of potatoes averaged 49 cents per bushel on October 15 compared with 62.8 cents on September 15, 74.9 cents on October 15, 1933, and 64.6 cents the October 1910-1914 average.

New Jersey Certified Seed Potatoes

IRISH COBBLERS

JERSEY REDSKINS

**High Yielding
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**Vigorous
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PROTECT THE INDUSTRY

In our attempts to regulate the potato industry we must be certain that we have a worth while plan before we consider its adoption. Numerous plans have been suggested. Certain of these may be satisfactory for local areas but they would probably be of little value elsewhere. We must appreciate that a plan which would be satisfactory in the Southern or early potato growing states would not necessarily be workable in the intermediate or the late states.

Many question the need of any form of regulation. They are convinced that the situation will adjust itself as it has in past years. We should remember, however, that under this system the grower never knows what the next year will bring forth in the way of prices. If the extreme fluctuations in the price level from year to year could be prevented by some form of regulation, such a system would be worthy of consideration.

In a recent address, Secretary of Agriculture Wallace, discussed the possibility of increasing the farmers' income so that agriculture would receive a larger proportion of the total national income. He went on to say that, "While such an addition to the farmers' income would result in improving the farmers' standard of living and restore a little more than the historic ratio between agriculture and industry, I question whether it would last unless it were accompanied by some control over, or at least coordination of, the expansion in agricultural production. Without such control, it is almost inevitable that the higher price for farm products would again invite huge surpluses and another agricultural price depression. Without such control, the recurring cycle of over- and underproduction in hogs, cattle, cotton, potatoes, etc., would promptly reappear. Our hopes for agriculture are bound up with the need for maintaining a workable balance between production and consumption."

Although it is difficult to devise a plan which will be acceptable to the different potato growing sections, we must strive to do so if the industry is to be placed on a sound basis. Numerous meetings have already been scheduled in the various sections to consider proposed plans. We must avoid anything which will hamper the industry but a sound plan should have the support of all.